FLIGHT FOLDER

Flight No.	B441
Date:	28(Z)-29 Apr 2009
Take Off:	23:55:00Z
Landing:	04:49:34Z
Flight Time	4h 54m 34s

Campaign: MEVEX Maritime Flight 3
Operating Area: Ocean, E of Muscat

POB	Position	Name	Institute	Logs y/n
1	Captain	Alan Roberts	Directflight	
2	Co-pilot	Ian Ramsay Rae	Directflight	
3	CCM	Dawn Quinn	Directflight	
4	Mission Scientist	Jon Taylor	Met Office	
5	Flight Manager	Jim Crawford	FAAM	
6	Core Chem / AVAPS	Doug Anderson	FAAM	
7	Cloud Physics	Martyn Pickering	Met Office	
8	ARIES	Stuart Rogers	Met Office	
9	SWS / SHIMS	Martin Glew	Met Office	
10	Wet Neph / CVI / IIR	Andy Wilson	Met Office	
11	MARSS	James Bowles	Met Office	
12	Mission Scientist 2	Dave Kindred	Met Office	
13	Mini-LIDAR	Joss Kent	Met Office	
14				
15				
16				
17				
18				
19				

Missing Log Sheet	Reason
ViRC chat log	No contact with aircraft so log not included (mainly connect/disconnect msgs)
Brief	Sortie brief to be added
De-brief	Sortie De-brief yet to be created by ???
Core Chemistry / TDLAS	no In Flight log except in cases of instrument problems
AVAPS log	AVAPS log to be completed
PSAP log	No log as PSAP pump/filter info included on Flight Summary page
Wet Neph	No log passed to FAAM yet
CVI	No log passed to FAAM yet
SWS	No log passed to FAAM yet
Mini-Lidar	No log passed to FAAM yet
IIR	No IIR log is provided for the Flight Folder

Revision	Date	Author	Comments
r0	31 Dec 2009	Doug Anderson	Initial version missing the above noted logs
r1			
r2			

VIDEO RECORDINGS:

The following avi format video recordings should be available at the BADC in core_processed/faam-video :

faam-video-dfc_faam_20090429_r0_b441_000244_1hz.avi
faam-video-dfc_faam_20090429_r0_b441_005702_1hz.avi
faam-video-dfc_faam_20090429_r0_b441_015855_1hz.avi
faam-video-dfc_faam_20090429_r0_b441_025912_1hz.avi

faam-video-ffc_faam_20090429_r0_b441_000226_1hz.avi
faam-video-ffc_faam_20090429_r0_b441_005644_1hz.avi
faam-video-ffc_faam_20090429_r0_b441_015644_1hz.avi
faam-video-ffc_faam_20090429_r0_b441_015842_1hz.avi
faam-video-ffc_faam_20090429_r0_b441_025900_1hz.avi
faam-video-ffc_faam_20090429_r0_b441_035900_1hz.avi

faam-video-rfc_faam_20090429_r0_b441_000231_1hz.avi
faam-video-rfc_faam_20090429_r0_b441_005652_1hz.avi
faam-video-rfc_faam_20090429_r0_b441_015652_1hz.avi
faam-video-rfc_faam_20090429_r0_b441_015848_1hz.avi
faam-video-rfc_faam_20090429_r0_b441_025903_1hz.avi
faam-video-rfc_faam_20090429_r0_b441_035903_1hz.avi

faam-video-ufc_faam_20090429_r0_b441_000238_25hz.avi
faam-video-ufc_faam_20090429_r0_b441_005657_25hz.avi
faam-video-ufc_faam_20090429_r0_b441_015735_25hz.avi

FLIGHT SUMMARY

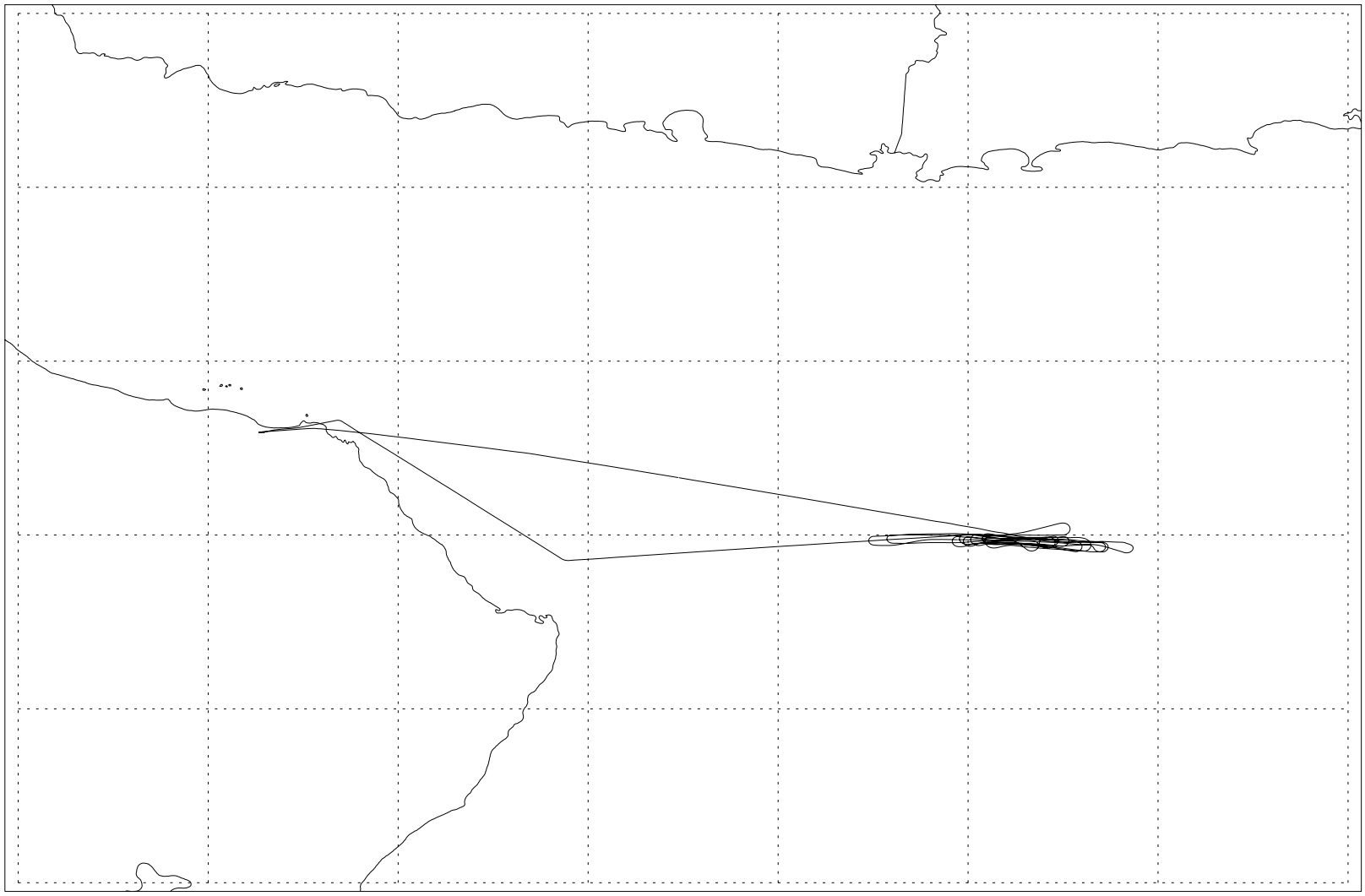
Flight No B441
Date: 28/29 April 2009
Project: MEVEX
Location: maritime

Start Time	End Time	Event	Height (s)	Hdg	Comments
233714		GIN	0.18 kft	266	started
234205		Start-Up	0.18 kft	268	
234537		ASP	0.18 kft	264	open
235500		T/O	11.3 kft	127	muscat
241053		transit	19.0 kft	129	fl190
242252		heimann	19.0 kft	087	cal 11
244135	250118	Profile 1	19.0 - 3.1 kft	088	
244410		bbr	16.8 kft	090	extend
244714		P1	14.1 kft	090	interrupt
244914		P1	14.3 kft	256	resumed
250145		bbr	3.1 kft	205	retract
250223		heimann	3.2 kft	119	cal 11
250248	251115	Run 1.1	3.2 - 3.1 kft	092	
250929		!	3.1 kft	091	abeam f79 miss; too close
251526	252030	Run 1.2	3.1 kft	276	
251731		!	3.1 kft	273	abeam f79 at bottom edge of box
252058		heimann	3.1 kft	205	cal 11
252239	252824	Run 1.3	3.1 kft	068	
252446		!	3.1 kft	094	abeam f79 good pass
253018	253648	Run 1.4	3.2 - 3.1 kft	267	
253347		!	3.1 kft	270	abeam f79 good pass
253731		heimann	3.1 kft	188	cal 11
253831	254424	Run 1.5	3.2 - 3.1 kft	086	
254115		!	3.1 kft	090	abeam f79 good pass
254559	255249	Run 1.6	3.2 - 3.1 kft	259	
254920		!	3.1 kft	266	abeam f79 good pass
255505	260052	Run 1.7	3.1 kft	073	
255745		!	3.1 kft	093	abeam f79 good pass
260234	260613	Run 1.8	3.2 - 3.1 kft	264	
260551		!	3.1 kft	267	abeam f79 good pass
260923		heimann	5.1 kft	281	cal 11
261124	261755	Run 2.1	5.1 kft	074	
261433		!	5.1 kft	094	abeam f79 miss; too close 5x beam from centre
261942	262624	Run 2.2	5.1 kft	282	
262306		!	5.1 kft	273	abeam f79 miss; too close 4x beam from centre
262758	263604	Run 2.3	5.1 kft	100	
263118		!	5.1 kft	096	abeam f79 miss; too far 5x beam from centre
263921	264224	Run 2.4	5.1 kft	275	
264214		!	5.1 kft	273	abeam F79 miss; too close 5x beam on centre
264748	265413	Run 3.1	10.1 kft	082	
265138		!	10.1 kft	095	abeam f79 good pass
265507		heimann	10.1 kft	358	cal 11
265627	265904	Run 3.2	10.1 kft	272	

265816		!	10.1 kft	271	abeam f79 miss; too close
265912	271712	Profile 2	10.1 - 0.17 kft	271	1012 qnh
270600		!	4.2 kft	270	rod >500ft min
271150		P2	1.1 kft	270	interrupt
271336		P2	1.0 kft	093	resume
271712	273246	Run 4.1	0.17 - 0.24 kft	083	1012 qnh
271753		heimann	0.23 kft	089	cal 11
273003		!	0.16 kft	097	abeam f79
273605	274231	Run 5.1	3.1 kft	273	
273949		!	3.0 kft	269	abeam f79 good pass
274312		heimann	3.1 kft	198	cal 11
274520	274719	Run 5.2	3.1 kft	088	
274643		!	3.1 kft	087	abeam f79 miss; too close
274934	275130	Run 5.3	3.1 kft	294	
275115		!	3.1 kft	273	abeam f79 miss; too close
275630	281908	Profile 3	0.14 - 24.0 kft	279	
281937		transit	24.0 kft	282	
284934		Land	0.11 kft	177	Muscat 04:49:34
285241		pirouette 1	0.11 kft	126	125M start
285507		pirouette 1	0.11 kft	127	end
285739		ASP	0.11 kft	086	closed

B441 21:42:31–29:08:13

GLNG_PARA0581,GLAT_PARA0580



Sat May 2 08:00:51 2009

Mission Scientist's Log

MEUEX MARITIME & SUNRISE FLIGHT

28/29 APR 09

Flight No B.441... Date ..... Name JON TAYLOR Page 1 of 7

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
240307					TAKE OFF DARWIN
					PCASP ≈ 1800/cc on t/o
					4000/cc peak
					350/cc at 5000ft.
					Neph blows. ~ 200m^{-1} at
					surface. Surface layer · surface to
					5000ft = 100m^{-1} then increases again
					to · 180m^{-1} at · 7500ft then falls
					down to 0 at 16500ft ·
240810		16700	on (103)		6m·s^{-1} / 196 deg T = -3·39
			128deg		Td = -23·68·
					Below 8000ft wind ≈ 250 to 300°
					above wind 150 to ~~250°~~ 15000ft
241050		FL190·	129	23°6'N 59°18'E	wind 005 / 25 deg
					T = -8·3 Td -32·6
243008					F79 22°58' 062E North 9kts·
					QNH 1608 kPa.
243410		FL190	087	22°56'N 61°18'E	As sky lightens can see there
					is significant higher level Ci
					around today. ~~5~~ 6/8 Ci ?
					ship turned onto 090 deg
					persistent contrails

Mission Scientist's Log

Flight No **B** 669 Date 28/29 AM Name JON TAYLOR Page 2 of 7

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
260344					Lidar shows significant changes
					in aerosol as we head east on transit.
					supercooled developing radially.
					Ht of upper layer increasing and
					becoming more intense Ht of lower layer
					decreasing
260435	P1↓	FL190			start of P1↓ to ~3000ft
		FL163			top of aerosol layer. scattering ↑
260816	P1	FL160	090	22056'N 62°30'E	Interrupt P1 East of ship.
260916	P1↓	FL160	255	23°N 62°40'E	Restart P1
					Cycles on 35 → 20 m⁻¹
					R=G=B.
250118	P1	3000ft			End of P1
250123					F7 2258N 062 05'E Hdg 090.
250248	R1·1	3000ft	093	22560N 61°3E	Str R1·1 towards ship [redacted]
					wind 006/255 T=30.23 [redacted]
					Td=7.01°C
					[redacted]
250924					A dear ship - slightly too close
					no IRC imagery but on spotter.
					Lidar shows aerosol tops at 700m
					below. looks like 6/8 Cu persistent
					cirrus
251115	R1·1	3000ft	093	22°56'N 62°0'E	end of R1·1

Mission Scientist's Log

Flight No **B** 449 Date 28/29 APR Name JON TAYLOR Page 3 of 7

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
251526	1.2	3000ft	276	22°56'N 62°12'E	Start Run 1.2
					[redacted]
					solar azim
					sol azm = 91.28°.
251731	1.2	3000ft	276		A beam ship IRL saw deck ✓✓
					and superstruct
					Aerial shower at western end of
252030	1.2	3000ft			run 1.2 End
252239	1.3	3000ft	080	22°56' 62° E	Run 1.3 start.
					[redacted]
252466		3000ft		22 56' 62 12' E	A beam ship IRL ✓✓
					006 / 268° T = 29.76
					Td = -1.75°C
					[redacted]
252824	R1.3	3000ft			End R1.3
253018	R1.6	3000ft	270	22°56'N 62°18'E	St R1.6 011 / 279°
					T = 29.58 Td = -1.71°C.
					[redacted]
253367	R1.6	3000ft	270	22°56'N 62° 6E	a beam ship IRL ✓✓
					dieter skuas would bye close to
					ship further west wing.
253648	R1.6	3000ft		23° N 61°56'E	End R1.6

Mission Scientist's Log

Flight No **B**..449.... Date ..28/29 APR..... Name ..JON TAYLOR..... Page ..4.. of ..7..

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
253834	1·5	3000ft	083	22°05'N 62°E	St Run 1·5 ship 12nm abeam
					005/267 deg. ship hdg 090.
					[redacted]
254115.	1·5	3000ft			Abeam ship IRE VVV
					Good wake capture also.
					θ = 85·32°.
254626		3000ft		22°56'N 62°26'E	End Run 1·5
254659	R1·6	3000ft	256°	22°56'N 62°26'E	St Run 1·6 ship 16nm on
					wind 011/280°. T=29·57
					Td=-1·58
254920	1·8	3000ft		22°56'N 62°12'E	Abeam ship IRE VVV.
					[redacted]
252249	1·8	3000ft		22 56 N 61° 56 E	End Run 1·6 T=30·32
					007/253°. Td = 1·96
					8/8 cloud Ci above.
255518.	R1·7	3000ft	070	22°56'N 62°E	St Run 1·7 ship 12nm abeam
					[redacted]
					θ=82°
255745	R1·7	3000ft	090	22°56'N 62°12'E	Abeam ship IRE = VVV
					Good stern wake
260052	R1·7	3000ft		22°56'N 62°30'E	End R1·7 wind 007/278deg.
					T=29·55 Td=-1·92°C

10 5 straight climb
20 straight climbs down
Run 15 / 18. 3000ft 050 to 085

Mission Scientist's Log

Flight No B...461... Date 28/29 APR Name JON TAYLOR Page 5 of 7

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
260234	1·8	3000ft	262	22°56'N 62°24'E	St Run 1·8 13nm away.
260551			290		Abeam ship IRC = W
					[redacted]
					still 8/8 Ci above but thin
					θ = 80·77°.
280613	1·8	3000ft		22°57'N 62°12'E.	End Run 1·8 + climbs to 5000ft
261126	2·1	5000ft			St Run 2·1 QNH 1009.
					ship 13nm ahead.
					[redacted]
261633		5000ft	090		Abeam ship IRC = NO.
					In nearest layer
261955	2·1	5000ft			End Run 2·1
261962	2·2	5000ft	281	22°55'N 62°30'E	St Run 2·2 ship 1km
					wnd·007/28?kts
					T=24·38 Td=-6·38°C
					[redacted]
262306		5000ft	273	22°56'N 62°18'E	Abeam ship IRC = NO.
262624	2·2	5000ft		22°56' 62°00E	End Run 2·2
262758	2·3	5000ft	096	22°56'N 62°6'E	St Run 2·3 ship 1km ahead
					[redacted]
263118					Abeam ship IRC = NO. θ = 75°.
263604	2·3	5000ft			End Run 2·3
					22°57·5N 062°22·4E 090 10kts

Mission Scientist's Log

Flight No B449 Date 28/29 Apr Name Jon Thornton Page 6 of 7

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
263921	R2.4	5000ft	275	22°56'N 62°30'E	St Run 2.4 ship 13nm ahead.
					[redacted]
264216					Abeam ship INC = 000
264224	R24	5000ft			End Run 2.4 + climb to 10000ft
					Still Ci above
264948	R3.1	10000ft	075	22°56'N 62°6'E	St Run 3.1 Po = 1009. ship 15nm
					Alt = Top of cirrus layer
					[redacted]
265138	R3.1	10000ft	098	22°56'N 62°26'E	Abeam ship INC = VV.
265413	R3.1	10000ft		22°56'N 62°36'E	End Run 3.1
265627	R3.2	10000ft	270		St Run 3.2
					[redacted]
265816					Abeam ship INC =
					wind 000/018 deg T = 11.66
					Td = -21.13°C
265906	R3.2	10000ft↓	271	23N 26.4E	End Run 3.2 + start of PN
265912	P2↓				
270854					PCASP = 650/cc 2500ft.
271150	P2	10000ft		22°56'N 61°24'E	Interrupt Profile 1013 mb
271336	P2↓	10000ft↓	092		Restart Profile ↓
271712	P2	100ft	090	22°56'N 61°[illegible]2E	End P2 @ 100ft
"	R4.1	100ft			Start Run 4.1 [redacted]
					Passed ship. wind 005/198°.
					[redacted]
273001		10ft			Passed abeam ship

Mission Scientist's Log

Flight No B441 Date 28/29 APR Name JON TAYLOR Page 7 of 7

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
273246	R4·1	100ft	090		End Run 4·1 + climb to 3000ft
					SST ≈ 27.1°C ± 0.5°
273605	R5·1	3000ft	272	22°56'N 62°42'E	St Run 5·1 ship 15nm
					wind 009/28 6deg.
					T = 29.73 Td = -1.65.
					[redacted]
273969	R5·1	3000ft			Abeam ship IRC = ✓✓
274231	R5·1	3000ft		22°56'N 62°18'E.	End Run 5·1
274520	R5·2	3000ft	090	22°54'N 62°26'E	St Run 5·2 heading back towards ship.
					wind 5/274° T = 30.68
					Td = 2.52
					[redacted]
274603					Abeam ship IRC = NO.
274719	5·2	3000ft	090	22°54'N 62°36'E	End Run 5·2
274936	5·3	3000ft	275		St Run 5·3 [redacted]
275115		3000ft			Abeam ship IRC = NO
275130	5·3				End Run 5·3 descend to 100ft
					and then proceed out on way
					home
275630	P3	100ft	285		St P3 100ft
					Bdy layer mostly Mainly clear not
					show square sheets still 7/8 cloud
281908	P3	FL260		23°18'N 60°30'E	End P3 In transit home
					Promotte at end.

IIR Camera 'Hits'
9/17 = 50%.

No. 2

Aircraft Scientist's Log

8 2/11 3000' 0/4 5000' 1/2 10000'

Flight No B441 Date 29-4-09 Name DRK Page 1 of 4

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
234530			→		off chocs, BAY 24, MUSCAT.
2355			→		T/O MUSCAT & Climb to transit alt.
	Temp inversion top ~970 mb (~1200') . Dpt dropped ~8°C too surface to this level.				
	Small 'lid' to BL top at 5000 – 5500'.				
	Another 'lid' to BL top at · 12000'.				
001100					now LEVEL AT FL190 TRANSIT ALT.
004135	P1 ↓	FL190	093°	230.0N 6200E.	START P1 T/E Ci cover above E to E. (+ persistent contrails)
0058		Significant layer 9500'. (dries above rapidly & slt inversion).			
IIR CAMERA "HITS" 0102 48	START 1.1	3000'	093°		Start 1st racetrack. Wind:
0105			→		Wind 250–255°/10–12kt.
1. X 010929		Abeam now.			Too close for IIR Field of View
011115	END R1.1	3000'			Wind 260°/15kt. Many contrails present.
011526	START R1.2	3000'	276°	21° 54' N 62° 12' E	Wind 280°/20kt
2. 1/2 011731	"	Abeam			Fraction too close, but got Ship & Top of SHIP in view
012030	END R1.2	3000'			
0122		Sunrise locally now			
012239	START R1.3	3000' (3.1kft)	078°		→ Adjusting hdg to align just to port of A/C.
3. ✓ 012446		Abeam now.			Good Pass – Centre of IIR Camera
012824	END R1.3	3000'.			
013018	START R1.4	3000'	270°		
4. ✓ 013347		Abeam now.			Good Pass – Centre of IIR Camera.
013648	END R1.4	3000' (3.1kft)			

[2600 = 0200 Z]

Aircraft Scientist's Log

No. 2

Flight No B441 Date 29-4-09 Name DRK Page 2 of 4

	GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
	013831	START R1.5	3000 FT.	083°		
5. ✓	014115		Abeam now.			GOOD PASS – Centre of screen on IR Cam. [3–4 ship lengths of wake]
	014424	END R1.5				
	014559	START R1.6	3,000 FT (3·1 kft)	265°		WIND 280°/20kt.
6. ✓	014920		Abeam now	→		GOOD PASS AGAIN
	015249	END R1.6	3000 FT.	281°.		IR Camera ~2 sec ahead of DRS/HORACE
						Will perform further racetrack at 3000 ft (2 miles)
	015505	START R1.7	3000 FT	084°	22°54'N 62°00'G.	
7. ✓	5745.	←	Abeam now			Good capture on IR Camera (TIMING IR CAM −2 SEC FROM HORACE)
	020052	END R1.7	[redacted]			
	020234	START R1.8	3000 FT	270°		285°/20kt.
8 ✓	020551		Abeam now.			
	020613	END R1.8				MARSS 'double-beam' switched off to recover on this run.
		Climb to	5000'.			
	021124	START R2.1	5000 FT (5·1 kft)	084°	23°54'N 63°06'E	Start 1st racetrack at this level.
9. ✗	021433		Abeam now.			NOTHING SEEN – TOO CLOSE TO TARGET
	021755	END R2.1				
	021942	START R2.2	5000 FT	281°		Leg 2, Racetrack 1 at 5000 FT
10 ✗	022206		Abeam now			STILL TOO CLOSE, NOTHING SEEN ON IR
	022624	END R2.2	5000 FT.			
	022758	START R2.3	5000 FT	093°		Leg 1, Racetrack 2 at 5000 FT
11 ✗			Abeam now			TOO FAR AWAY, NOTHING SEEN ON IR.
	023921.	END R2.3 START R2.4	5000 FT	275°		
12 ✗	024214		Abeam now			TOO CLOSE, NOTHING SEEN.
	024224	END R2.4	5000 FT			END 5000' Racetracks; Climb to FL100

0247 NEW BIAS & HGHT VALUES IN EXCEL AT END OF THIS ASCENT (just below 10,000 FT) } DRY LAYER ABOVE

Aircraft Scientist's Log No. 2

Flight No B.441 Date 29-4-09 Name DEK Page 3 of 4

	GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
	024748	START R3.1	FL100 (10.1kft)	078°		Start racetrack at 10,000 FT.
13 ✓	025138		Abeam	now		Good Capture on IIR Cam. (Middle of beam)
	025413	END R3.1				
	0255					123° / 2 kt.
	025627	START R3.2	FL100	272°		Start 2nd leg, racetrack @ this level
14 x	0257.		Abeam	→		NIL WIND (CALM).
	025859	END R3.2	10.1 kft		→	SLIGHTLY LOW on CAM (Too close); SPOTTER
	025912	START P1	From 10,000' ↓ 1000', then 100'. at 1000'/min			
	030530		Slow DESCENT RATE → 500'/min from ~ 4.2kft.			
	031150	Interrupt P2	1000'			Turning in Profile ↱.
	031336	Resume P2	1000' ↓			
			Approx 500' – 1000'.			V. sharp change in D.T° 0° → +20°C
	Conditions for	[redacted] GOOD	SURFACE	DUCT?		Inversion +28°C → +33°C
	031712	END P2/ START R4.	100'	090°	22°54'N 61°48'E	End P2/Start R4
	033000		Passing ship.	at 100'		now (to port).
	033246	END R4	100' (0.2kft)			End R4. Climb to 3000' for (extra) final racetrack pattern & IIR Camera action.
	033605	START R5.1	3000' (3.0kft)	274°		leg 1 of Racetrack at 3000'
15 ✓	033949		Abeam Ship.	→		Good Pass.
	034231	END R5.1				
	034520	START R5.2	3000'	089°		leg 2 of Racetrack at this level.
	034530			→	Wind	277°/10kt. Temp +30°C DPT -1°C
16 x	034643	END [redacted]	Abeam	Ship		Missed on IIR Camera
	034719	END R5.2				End leg 2. Will turn ↱ &
						make 1 final approach at 3000'.

Aircraft Scientist's Log

No. 2

Flight No B141 Date 29-4-09 Name DRK Page 4 of 4

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
034934	START RS3	3000'	269°		Start final run approaching vessel.
17. X 035115	END RS3 &	Abeam now.			Too close – no image seen
035130	START Profile 4		273°.		Final profile 3000' to 50'.
	SURFACE PASSAGE	DCT	LATER SLIGHTLY	HIGHER 1300'	[Rise in DP +23°C (+1°C → +24°C)]
		TURN ON	EXIT	PROFILE DESCENT 800'	
035630	PROFILE 4	100'.	282°		Start final Profile ↑
					END PROFILE & TRANSIT → MUSCAT.
042540	—	FL240	280°		On transit → Muscat.
0437		FL102	278°		On final descent.
0450		Land	MUSCAT		
[2355		T/O	MUSCAT]		
		4h 55 m FLIGHT LENGTH.			
0453		START HEADING	125°		START PIROUETTE ↘
045508		END HEADING	125°		END PIROUETTE.

Cloud Physics Flight Log B441

Date: 28/04/09	Operator: MAP	DRS Time: 21:54:00	DAU1 Time: +0	DAU2 Time: +0	AUX1 Time: +0	AUX2 Time: +0

DAU2 Disk space?

	PCASP SPP-200		CDP		PCASP		2DC		FFSSP		SID3	
Operated?											No	
Pre-flight checks	Vref	7.5	Ref V (~3):	2.89	Vref (>7):	unknown	El#1 V (>1):	-2.5	Ref V:	3.3V	Comms?	
	Sample flow	1.35			Flow (~1):	0.68	El#32 V (>1):	-2.3				
	Sheath flow	16.99			Pressure:	1006						
					Temp (NDIT)	32.7						

GMT	Height	CDP		PCASP SPP-200		PCASP		2DC		Habit	FFSSP	SID3	Comments
		#/cc	MVD	#/cc	MVD	#/cc	Mean R	#/L	Max R		Blocks Tx	Counts	
00:02:00													Heaters on
00:41:33	FL190			40	0.1	20	0.06				19		Start Profile 1
00:42:45	FL180			50	0.1	30	0.06				20		Old PCASP ch1 noisy
00:43:51	FL170			50	0.2	45	0.06						
00:44:55	FL160			60	0.2	65	0.08						
00:46:01	FL150			100	0.2	75	0.08						
00:47:13	FL140	0.1	4	100	1.5	95	0.11						
00:50:47	FL130	0.1	4	100	1.5	85	0.11						
00:51:45	FL120	0.1	4	100	1.5	95	0.11						
00:52:39	FL110	0.1	4	100	1.5	90	0.10						
00:53:27	FL100	0.1	4	200	1.5	200	0.09						
00:54:30	FL090	0.2	8	350	1.5	400	0.09						
00:55:41	FL080	0.2	7	400	1.5	500	0.09				21		
00:56:49	FL070	0.2	7	450	1.5	540	0.09						
00:57:57	FL060	0.2	7	300	1.5	500	0.09						Heaters off
00:59:15	FL050	0.2	7	500	1.5	630	0.09						
01:00:15	FL040	0.3	7	600	1.5	690	0.09						
01:01:23	FL030	0.25	10	500	1.5	610	0.09				22		End of Profile
01:02:48	3000’												Start Run 1.1
01:03:00		0.2	7	550	1.5	600	0.09				24		
01:05:00		0.2	7	500	1.5	560	0.09				25		
01:07:00		0.2	7	550	1.5	560	0.09						
01:09:00		0.25	7	550	1.5	590	0.09						

FAAM

Cloud Physics Flight Log B441

GMT	Height	CDP		PCASP SPP-200		PCASP		2DC		Habit	FFSSP	SID3	Comments
		#/cc	MVD	#/cc	MVD	#/cc	Mean R	#/L	Max R		Blocks Tx	Counts	
01:11:15													End of Run
01:15:26	3000’												Start Run 1.2
01:16:00		0.2	7	575	1.5	580	0.09				28		
01:18:00		0.3	7	550	1.5	570	0.09				30		
01:20:00		0.3	7	575	1.5	540	0.09						
01:20:29													End of Run
01:22:38	3000’												Start Run 1.3
01:23:00		0.3	7	550	1.5	570	0.09						
01:25:00		0.3	7	550	1.5	560	0.09				31		
01:27:00		0.3	7	550	1.5	570	0.09				32		
01:28:24													End of Run
01:30:18	3000’												Start Run 1.4
01:31:00		0.3	7	580	1.5	570	0.09				33		
01:33:00		0.3	7	550	1.5	550	0.09				34		
01:35:00		0.3	7	550	1.5	550	0.09						
01:36:50													End of Run
01:38:32	3000’												Start Run 1.5
01:39:00		0.3	7	550	1.5	530	0.09				35		
01:41:00		0.25	7	550	1.5	550	0.09				36		
01:43:00		0.3	7	550	1.5	560	0.09				37		
01:44:25													End of Run
01:46:00	3000’												Start Run 1.6
01:47:00		0.3	10	550	1.5	545	0.09				38		
01:49:00		0.3	7	550	1.5	545	0.09						
01:51:00		0.3	7	550	1.5	530	0.09				39		
01:52:50													End of Run
01:54:53	3000’												Start Run 1.7
01:55:00		0.3	7	550	1.5	530	0.09				40		
01:57:00		0.3	7	550	1.5	530	0.09				41		
01:59:00		0.3	10	550	1.5	570	0.09				42		
02:00:53													End of Run
02:02:35													Start Run 1.8
02:03:00		0.3	10	550	1.5	540	0.09				43		
02:05:00		0.3	10	550	1.5	530	0.09						
02:06:15													End of Run
02:11:25	5000’												Start Run 2.1

FAAM

Cloud Physics Flight Log B441

GMT	Height	CDP		PCASP SPP-200		PCASP		2DC		Habit	FFSSP	SID3	Comments
		#/cc	MVD	#/cc	MVD	#/cc	Mean R	#/L	Max R		Blocks Tx	Counts	
02:12:00		0.2	7	500	1.5	430	0.09				45		
02:14:00		0.2	7	500	1.5	440	0.09						
02:16:00		0.2	7	500	1.5	430	0.09				46		
02:17:55													End of Run
02:19:41													Start Run 2.2
02:20:00	5000’	0.2	7	500	1.5	480	0.08						
02:22:00		0.2	7	500	1.5	455	0.09				47		
02:24:00		0.2	7	500	1.5	430	0.09						
02:26:00		0.2	7	500	1.5	430	0.09						
02:26:23													End of Run
02:28:00	5000’												Start Run 2.3
02:29:00		0.2	7	500	1.5	400	0.09				48		
02:31:00		0.2	7	500	1.5	430	0.08						
02:33:00		0.15	7	500	1.5	445	0.09						
02:35:00		0.15	7	500	1.5	425	0.09				49		
02:36:07													End of Run
02:39:12	5000’												Start Run 2.4
02:40:00		0.2	7	500	1.5	520	0.09				50		
02:42:00		0.15	7	500	1.5	430	0.09						
02:42:28													End of Run
02:47:49	10000’												Start Run 3.1
02:48:00		0.1	7	180	1	110	0.09				51		
02:50:00		0.1	7	180	1	110	0.09						
02:52:00		0.1	4	150	1	130	0.09						Old PCASP heater on
02:54:14													End of Run
02:56:29	10000’												Start Run 3.2
02:57:00		0.1	4	160	1	120	0.09						
02:59:05	FL100	0.1	4	150	1	110	0.09				52		End of Run & Start Profile 2
03:00:55	FL090	0.2	6	450	1.5	410	0.09						
03:02:00	FL080	0.2	6	500	1.5	510	0.09						
03:03:04	FL070	0.2	6	500	1.5	540	0.09						
03:03:53	FL060	0.2	7	500	1.5	500	0.09						
03:04:58	FL050	0.2	7	500	1.5	510	0.08						
03:06:24	FL040	0.2	7	550	1.5	600	0.09						Heater off on Old PCASP
03:08:16	FL030	0.2	7	500	2	630	0.09						
03:10:01	FL020	0.2	7	500	2	640	0.09						

FAAM

Cloud Physics Flight Log B441

GMT	Height	CDP		PCASP SPP-200		PCASP		2DC		Habit	FFSSP	SID3	Comments
		#/cc	MVD	#/cc	MVD	#/cc	Mean R	#/L	Max R		Blocks Tx	Counts	
03:11:50	FL010	0.5	5	450	2	600	0.1				55		
03:17:10	100’												End of Profile 2 & Start Run 4
03:18:00		0.5	7	450	1.5	560	0.09				61		
03:20:00		0.5	7	450	1.5	600	0.09				62		
03:22:00		0.6	7	450	1.5	650	0.09				63		
03:24:00		0.6	7	450	1.5	660	0.09				64		
03:26:00		0.6	7	450	1.5	640	0.09				65		
03:28:00		0.5	7	450	1.5	580	0.09				66		
03:30:00		0.6	7	450	1.5	630	0.09				67		
03:32:00		0.5	7	450	1.5	600	0.09						
03:32:47													End of Run
03:36:05	3000’												Start Run 5.1
03:37:00		0.3	7	500	1.5	550	0.09				69		
03:39:00		0.3	7	450	1.5	550	0.09						
03:41:00		0.3	7	450	1.5	540	0.09				70		
03:42:35													End of Run
03:44:19	3000’												Start Run 5.2
03:45:00		0.3	7	500	1.5	490	0.09				71		
03:47:00		0.3	7	500	1.5	530	0.09				72		
03:47:30													End of Run
03:49:37	3000’												Start Run 5.3
03:50:00		0.3	7	475	1.5	520	0.09				73		
03:51:34	3000’												End of Run & Start P2
03:52:51	FL020	0.3	7	500	1.5	680	0.10				74		
03:54:15	FL010	0.3	7	450	1.5	575	0.09						
03:56:30	100’	0.5	7	430	1.5	600	0.09				75		End of Profile & Start P3
03:57:40	FL010	0.4	7	400	1.5	500	0.10				76		
03:58:37	FL020	0.4	7	400	1.5	430	0.10						
03:59:30	FL030	0.4	7	400	1.5	430	0.10						
04:00:32	FL040	0.3	7	400	1.5	420	0.09				77		
04:01:39	FL050	0.2	5	400	1.5	330	0.09						
04:02:47	FL060	0.2	5	400	1.5	310	0.09						
04:03:35	FL070	0.2	5	400	1.5	300	0.10						
04:04:32	FL080	0.2	5	350	1.5	240	0.10						
04:05:23	FL090	0.2	5	350	1.5	225	0.10				78		
04:06:07	FL100	0.2	5	300	1.5	230	0.09						

FAAM

Cloud Physics Flight Log B441

GMT	Height	CDP		PCASP SPP-200		PCASP		2DC		Habit	FFSSP	SID3	Comments
		#/cc	MVD	#/cc	MVD	#/cc	Mean R	#/L	Max R		Blocks Tx	Counts	
04:07:05	FL110	0.2	5	200	1.5	100	0.09						Heaters on
04:07:55	FL120	0.1	5	100	1	40	0.12						
04:08:47	FL130	0.1	3	100	1.5	40	0.12						
04:09:30	FL140	0.1	3	100	1.5	40	0.13						
04:10:18	FL150	0.1	5	100	1.5	35	0.15						
04:11:11	FL160	0.1	5	100	1.5	35	0.11						
04:12:17	FL170			30	0.5	15	0.08						
04:13:17	FL180			30	0.5	10	0.07						
04:14:22	FL190			30	0.3	10	0.06						
04:15:15	FL200			20	0.3	10	0.06						CH1 noise on old PCASP just starting
04:16:15	FL210			20	0.3	5	0.07						
04:17:24	FL220			15	0.2	5	0.06						
04:18:10	FL230			15	0.2	3	0.06						
04:19:06	FL240			15	0.2	5	0.06						End of Profile 3
04:35:35													Heaters off except old PCASP
04:41:13													Old PCASP heater off

Post flight

Instrument	Diagnostics		Brief report on instrument performance
PCASP (old)	Vref:	unknown	Noisy Ch1 when high and cold
	Flow:	0.72	
2DC	El#1:	-1.5	
	El#32:	-1.5	
PCASP SPP-200	Ref V:	7.64	Noisy
	Flow:	1.14	
CDP	Laser V:	4.10	Higher laser volts when cooler
FFSSP	Ref V:	3.6	
SID 3	Laser V:	N/a	
Rack Equipment		1.2GB	Please note SEADAS disk space remaining.

Flight: B441

KEY

- Not Fitted
- Fitted, Not Operated
- Duff Data
- Minor Problem
- OK

Thermometers
- Cabin Temperature:
- Heimann:
- Deiced Temp:
- Non-deiced Temp:

Hygrometers
- FWVS:
- Buck CR2:
- General Eastern:
- Johnson Williams:
- Nevzorov:
- Total Water Probe:

Cameras
- Downward Facing:
- Forward Facing:
- Rearward Facing:
- Upward Facing:

Navigation + Aircraft
- Cruciform GPS:
- GIN Applanix:
- INU Honeywell:
- Radar Altimeter:
- RVSM IAS:
- RVSM Static Pressure:
- XR5 GPS:

Misc Core
- HORACE:
- AMTG:
- AVAPS:
- Cabin Pressure:
- Printer:
- S9 Static Pressure:
- Satcom C:
- Satcom H (VIRC):
- Turb Centre-Static:
- Turb Left Right:
- Turb Up-Down:
- Turb Horizontal Chk:
- Turb Vertical Chk:
- Weather Radar:

DLUs:
- DLU AERACK:
- DLU BBR Lower:
- DLU BBR Upper:
- DLU Core Chem:
- DLU Core Consoles:
- DLU Port Aft:
- DLU Port Fwd:
- DLU Stbd Fwd:

Radiometers
Lower:
- BBR (clear) Lower:
- BBR (IR) Lower:
- BBR (red) Lower:

Upper:
- BBR (clear) Upper:
- BBR (IR) Upper:
- BBR (red) Upper:

- ARIES:
- DEIMOS:
- IR Camera:
- JNO2 Lower:
- JNO2 Upper:
- JO1D Lower:
- JO1D Upper:
- MARSS:
- SHIMS Lower:
- SHIMS Upper:
- SWS:
- TAFTS:

Cloud Probes
- 2DC:
- 2DP:
- FFSSP:
- PCASP:
- PCASP SPP-200:
- 2DS:
- ADA:
- CAPS:
- CCN:
- CDP (fuselage):
- CDP (Canister):
- CIP 100 (PIP):
- CIP 25 (CIP):
- CPI:
- CVI (Inlet):
- CVI PCASP-X:
- CVI Ly-A Hygro:
- FSSP (UMan):
- SID1:
- SID2:
- SID3:

Aerosol
- CPC 3025A:
- CPC 3786 H2O:
- Filters 47mm:
- Filters 90mm:
- Neph - Dry:
- Neph - Wet:
- PSAP:
- AMS:
- CPC (AMS):
- SMPS (AMS):
- CPC 3010A (CVI):
- INC:
- Mini-LIDAR:
- SP2:
- UHSAS:
- VACC:

Chemistry
- CO Aerolaser 5002:
- NOx TE42C:
- Ozone TE49C:
- Ozone TE49:
- SO2 TE43C:
- TDLAS (NIR) CH4:
- TDLAS (NIR) CO2:
- FAGE:
- Formaldehyde:
- NOx FAAM:
- NOxy:
- ORAC:
- PAN:
- PERCA:
- Peroxide:
- PTRMS:
- TDLAS (1C):
- WAS Bags:
- WAS Bottles:

Misc Non-Core
- CASI/ATM:
- LIDAR (big):
- LTI:
- SAW Hygrometer:

Report Created 15/09/2009 14:30:24

Last Updated: 04/05/2009 15:16:11

Faults / Incidents Log

Flight No. B441
Date: 28/29 April 2009

Instruments

cloud physics
SID3 not operated
old pcasp works ok below fl180, noisy above, channel 2 & higher ok
new pcasp noise from SWS 28V ? data not recorded after short start recording

CVI – ok
IIR – good
wet neph ok
dry neph ok

Nevzorov; failed sensor, not operated

Chemistry – good data
AVAPS – no sondes

MARSS – good data

SWS/SHIMS -lower shims not operated

ARIES – good data

Mini Lidar – good data

filters – not flown

FWVS – good data

SATCOM-H: mpds service good

GIN – serviceable

AMTG screen blanked although unit still operated

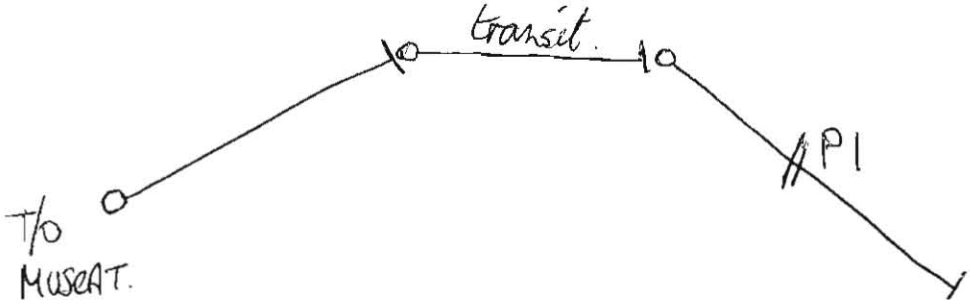
Aircraft

Satcom-H Calls
nil

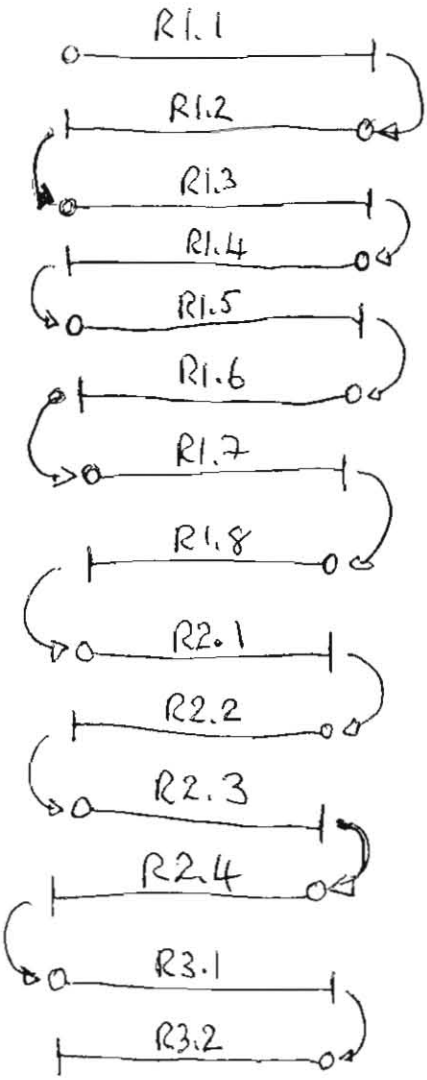
Post Flight - Turb Probe Water Traps

1. Indicate Amount of Water: a) Nil b) 1-2 drops c) ¼ full or more d) Ice present
2. Emptied by:
3. Dried by:

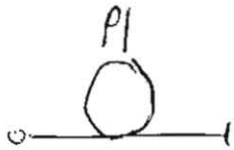
B441

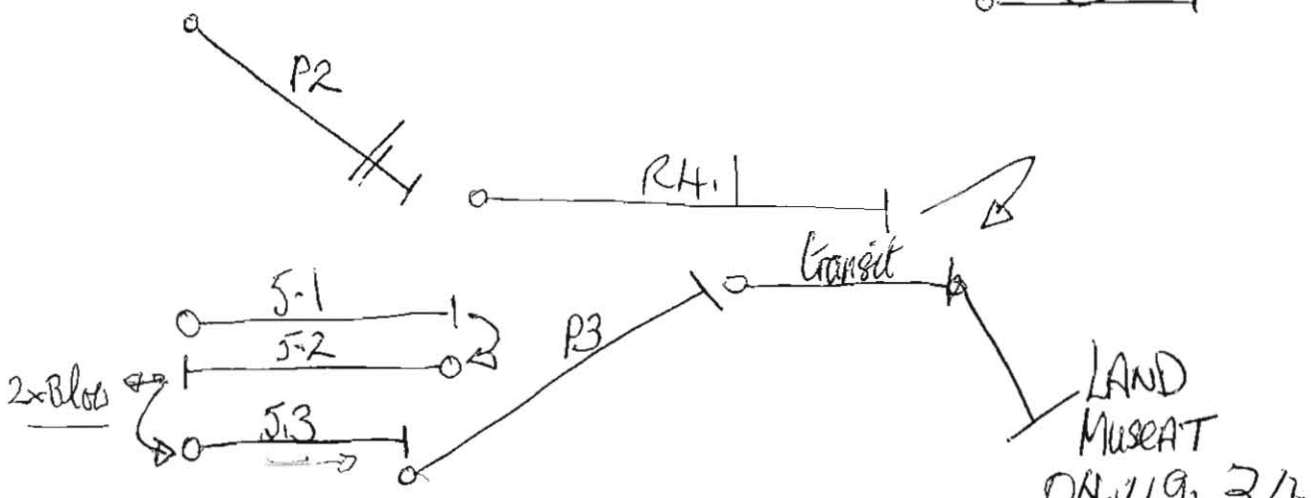


23:55:00



2× beams low or edge 5×B or centre
1×B " 4×B "
2×B high or edge 5×B or centre
2×B low " 5×B "





Pre-Flighter's Log

^ Clipboard power button

Date: 29/04/09 Flight No: B441 Pre-Flighter: PHIL ROSENBERG

No.	√ or x	Location	Action	Comments
1	✓	Hangar	Collect Dustbin, put on a/c	N/A
		Aircraft Cabin: Power-up		
2	✓	Core Chemistry	Gases x 3 ON	CHEMISTRY OPERATOR
3	✓	Cabin	All Racks Checked	
4		Fwd CorCon	All reqd CBs made	
5		Aft CorCon	CBs made, PCs ON	
6	✓	HORACE	Optical Disk loaded	
7	✓	HORACE	Recording data	
8	✓	HORACE	DLU Status Checked	
9	✓	HORACE	HORACE Status Checked	
10	✓	Satcom H	Power LED ON	
11	✓	Nevzorov	Checked and OFF	NOT RUN
12	✓	GPS	Checked	
13	✓	INU	Align	N/A
14	✓	Cameras Pictures	Checked x 4 OK	INSIDE OF DW FACING GLASS CLEANED.
15	✓	Core Chemistry	Instruments Checked OK	CHEM OPERATOR
16	✓	Core Chemistry	CO Flows Checked OK	CHEM OPERATOR
17	✓	FWVS	Set up & check on AUTO	
18	✓	Video x 2	Records okay, Rewind	NA
19	✓	Delced Rosemount	Heater Checked then OFF	
20	✓	Heimann	Calibration Checked	
21	✓	TWC	ON & Checked	
22	✓	GE	Balance checked	
23	✓	INU	Navigate then back to Align	N/A
24	✓	CNC	Butanol filled	NOT FUNCTIONING
25	✓	Dry Neph	Power up & Zero Cal	NEPH OPERATOR
26	✓	Miss. Sci Laptop	Checked Onboard	In cockpit
27	✓	CGPS	CBs and PC ON	N/A
28				
		External Checks		
29	✓	Turb Probe	Clean if reqd, Photo taken	
30	✓	JW	Cleaned & Checked	
31	✓	DI Rosemount	Cleaned & Checked	
32	✓	NDI Rosemount	Cleaned & Checked	
33	✓	Nevzorov	Cleaned/windings checked	
34	✓	GE	Cleaned & Checked	
35	✓	Lower BBRs	Domes cleaned/checked	
36	✓	Camera Windows	Cleaned	
37	✓	Heimann	Lens checked OK	
38	✓	TWC Cover	Fitted if required	
39	✓	All other covers	Removed	
40	✓	Dustbin	Returned to hangar	
41	✓	Pre-flight Bag	Returned to hold	** Check no butanol**
42	✓	Tools	Check ALL in Toolkit	
43	✓	Tools	Avalon informed	
		Avalon Checks		Signed
44	✓	Upper BBRs Checked & Cleaned		
45		ICEX applied		
46	✓	Turb Probe - Traps emptied, detail contents -		a)Nil b)1-2 drops c)1/4 full or more
47	✓	Turb Probe - Traps dried and resealed		

ARIES flight log

Flight: B441 | page 1 of 2

Date: 28/APR/09 | Operator(s): S. Rogers | Res: 1 | Gain A: 2 B: 2

Loc./Notes: MEVEX : Ship wake

Scans: *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

DRS time	Flt ptrn	Scans	View	Shtr	HBB	CBB	Comments
~21:35	——						Power On OK
~11 55	TAKEOFF						local time: silly o'clock
11 59 27	↑	Cal	CH	O	81	41	CH cal macro
00 11 00	FL190	Nadir	NZ	O	81	41	Nadir Zenith 30 sec macro
							To Shr 00 41
00 02 56	R2.1 3000'	N3min	N	O	80	41	Nadir 3min end 01.11 A bit murky outside.
00 15 30	R2.2	N3min	N	O	81	42	Nadir 3min end 0121 Oops - should have been Z
01 22 –	R2.3 3000'	N3min	N	O	81	42	Nadir 3min
01 29 29		Cal	CH	O	81	42	CH cal.
01 30 45	R2.4 3000'	Z3min	Z	O	81	43	Zenith 3min
01 38 35	R2.5	N3min	N	O	81	42	Nadir 3min
01 46 05	R2.6 3000'	Z3min	Z	O	81	42	Zenith 3min Lots of Ci
01 54 48	R2.7	N3min	N	O	81	42	Nadir 3min.
02 02 40	R2.8 3000	Z3min	Z	O	81	43	Zenith 3min Window 37c Mirror 36c
02 06 24	↑	Cal	CH	O	81	43	CH cal.
02 11 27	R2.1 5000'	N3min	N	O	81	42	Nadir 3min
02 19 45	R2.2 "	Z3min	Z	O	81	41	Zenith 3min.
02 28 00	R2.3 5000'	N3min	N	O	81	41	Nadir 3min
02 39 10	R2.4	Z3min	Z	O	81	41	Zenith 3min
02 42 35	↑	Cal	CH	O	81	41	CH cal.
02 47 52	R3.1 FL100	N3min	N	O	81	41	Nadir 3min Window 35c Mirror 22c
02 56 34	R3.2	Z3min	Z	O	81	41	Zenith 3min Ci
02 59 20	↓	Cal	CH	O	80	41	CH cal.
03 13 40	↓ ~~FL100~~	Cal	CH	O	81	42	CH cal Z NNW
03 15 50	~~100~~	240x1	N	O	81	41	Nadir
03 17 30	100'	240x1	Z	O	81	41	Zenith
03 18 35	100'	Cal	CH	O	81	42	CH cal.
03 20 01	"	480x1	N	O	81	42	Nadir
03 23 15		Cal	CH	O	81	42	CH cal
03 24 30		480x1	N	O	81	42	Nadir Window 36c Mirror 34c
03 29 ·		480x1	N	O			Nadir a-beam

ARIES flight log

Flight: B441 | page 2 of 2

Date: | Operator(s): | Res: | Gain A: B:

Loc./Notes:

Scans: *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

DRS time	Flt ptrn	Scans	View	Shtr	HBB	CBB	Comments
03:31:00	100'	Cal	CH	0	81	42	CH cal
03:32:20	"	480 x1	N	0	81	41	Nadir
03:32:—	↑	Cal	CH	0	81	41	CH cal
03:36:10	RSI 3000'	N3 min	N	0	81	42	Nadir 3 min
03:44:20	25.2 "	Z3 min	Z	0	81	42	Zenith Ci
03:47:25		Cal	CH	0	81	43	CH cal.
03:50:—	RSI 3000'	480 x1	N	0	81	42	Nadir
03:51:35	↓	Cal	CH	0	81	42	CH cal.
04:19:21	FL240	Nad Zen	NZ	0	81	41	Nadir / Zenith 30 second mean 0435

Microwave Radiometers FLIGHT LOG	Date	28/04/09	Flight	B441	log pages	
Operator(s)	J.Bowles		Campaign	MEVEX		
Departure	Muscat		Arrival	Muscat		

System start

MARSS

Visual pod inspection						Y
Close 3 SSP circuit breakers						•
Close all MARSS circuit breakers						•
FERA on				at time	22:10	
Temperature controller initial temps	Ch16	32°C	Ch 17	32°C	Ch18 -20	31°C
Temperature controller set points		54°C		58°C		40°C
MARSS CPU on				at time	22:12	
Initial target temperatures	Hot	303		Cold		303
Target heating						Y
*** CHECK SCAN HEAD CLEAR ***						•
Scanning on (LMD box)				at time	22:17 for 2min	
Scan indication		Monitor •			Visual	•

Deimos

Close all Deimos circuit breakers				
Turn on Deimos CPU				
*** CHECK SCAN HEAD CLEAR ***				
Start Deimos Software			at time	
Initial target temperatures	Hot		Cold	
Target heating				
Scan indication		Monitor		Visual
Weather	Cloud		Precip	
	Surface		Pressure	
	Other			

System functionality check

(after initial system warmup, approx 1 hour)

PC to DRS Time error	$t_{PC}=t_{DRS}$ +	0	at time	23:43:30	
Brightness temps 'sensible'					•
Target temps MARSS:	Hot	344.5	Cold	303.39	
Target temps Deimos:	Hot		Cold		

Channel gains 'sensible'	Ch1 A (-)	Ch3 A (-)	Ch1 B (-)	Ch3 B (-)	
	Ch16 (40-44)	Ch17 (45-49)	Ch18 (40-44)	Ch19 (40-44)	Ch20 (44-48)
	42	31	40	43	39

Power changeover

Headset on before start			•
Listen to engine start sequence	4, 3, 2, 1.		•
LMD off (3 switches, bottom to top)			•
Exit Deimos Software (x)			
POWER CHANGEOVER			
LMD on (3 switches, top to bottom)	then pushbutton		•
Restart Deimos Software			
System running again		at time	

Flight #	B	Date		Operator(s)		log page	2	of	2

Time	**Run id**	**Alt/FL**	*Remarks*	**Sys**
00:02	**Trans**		Marss mon restarted, graphs not updating prop	
01:05	**R1.1**		Blip on pos 6. Ship?	
01:45	**R1.6**		7/8 of patchy cirrus, otherwise clear.	
01:58	**R1.7**		Double bounce creeping in.	
02:05	**R1.8**	**3000**	Scanning stopped for double bounce.	
02:13	**2.1**	**5000**	Scanning	
03:05	**P2**		Signs of double bounce, changed view and seems to have gone??	
03:51	**P3**		Double bounce cutting in.	
05:02			Scanning stopped	
05:12:20			MARSS time 05:12:29	